REMARKS/ARGUMENTS

Applicant appreciates the consideration shown by the Office, as evidenced by the Office Action, mailed on 7 February 2006. In that Office Action, the Examiner rejected claims 1-7, 10-11, and 13-32 under 35 USC 102(a) on Nishimura et al. US6828078 and claim 8 under 35 USC 103(a) on Nishimura. After consideration of the Office Action, claims 33-63 (which had been withdrawn pursuant to a requirement for restriction) have been canceled. Claims 9 and 12 had been canceled in an earlier amendment. Claims 1-8, 10-11, and 13-32 are under consideration in the present application. Applicant respectfully requests reconsideration of the application by the Examiner in light of the above amendments and the following remarks offered in response to the Office Action.

Applicant respectfully submits that Nishimura does not teach or disclose the independent claim 1 or 16 recitations of (with emphasis added):

> 1. (currently amended) A method of forming a waveguide comprising a core region, a cladding region, and an index contrast region situated therebetween, the method comprising:
> depositing a polymerizable composite on a substrate to form a layer,
> patterning the layer to define an exposed area and an unexposed area of the layer **in a manner such that the unexposed are includes the core region**,
> irradiating the exposed area of the layer, and
> **volatilizing** the uncured monomer to form the waveguide, **wherein the polymerizable composite comprises a polymer binder and sufficient quantities of an uncured monomer to diffuse into the exposed area of the layer and form the index contrast region**.
>
> 16. A method of forming a waveguide comprising a core region, a cladding region, and an index contrast region situated therebetween, the method comprising:
> providing a polymerizable composite comprising a polymer binder and an uncured monomer,
> depositing the polymerizable composite on a substrate to form a layer,
> patterning the layer to define an exposed area and an unexposed area of the layer, **one portion of the unexposed area comprising the core region and another portion of the unexposed area comprising a diffusion source region**,
> irradiating the exposed area of the layer, and
> **volatilizing the uncured monomer to form the waveguide and index contrast region**.

Applicant's simplest example of irradiating and volatilizing can bee seen with respect to Applicant's FIGs. 7-9 and the accompanying text at Specification paragraphs 42-47. The irradiating serves to cure the monomer in exposed layer whereas the volatilizing serves to cause the uncured monomer in unexposed areas to be evaporated vertically but also to be diffused laterally to form the index contrast region. The movement of the monomer is shown with respect to Applicant's FIG. 8, and the resulting index contract region 16 is shown in Applicant's FIG. 9.

The section of Nishimura relating specifically to waveguides is present in column 40, line 49, through column 41, line 26 with relevant excerpts being copied below:

> A photosensitive refractive index changing composition for forming an optical waveguide may be dissolved in a suitable solvent before use (solution A). … .
> … .

> The solution B is first applied to a suitable substrate … and then the solvent is removed to form a coating film …. This coating film serves as a lower clad layer. … .
>
> Thereafter, the solution A is applied to the lower clad layer … and then the solvent is removed to form an intermediate layer ….
>
> Subsequently, the intermediate layer is exposed to light through a photomask for shielding the core portion of a waveguide pattern from light and post exposured baked. The unexposed portion serves as a core portion and the exposed portion serves as a side clad layer. … ..
>
> The solution B is applied to the above intermediate layer again and then the solvent is removed to form an upper clad layer … .

Also relevant to understanding the above waveguide example is the more general example regarding formation of the refractive index pattern on column 34, lines 19-45:

> First, the refractive index changing composition is dissolved or dispersed in a solvent to prepare a composition having a solid content of 5 to 70wt %. … .
>
> Thereafter, this composition is applied to the surface of a substrate such as a silicon wafer and prebaked to remove the solvent so as to form a coating film of the refractive index changing composition. The parts of formed coating film is then exposed to radiation through a pattern mask and heated to make a refractive index difference between exposed and unexposed portions of the refractive index changing composition.
>
> An acid or base is formed from the radiation sensitive decomposer (C) by the above exposure to act on the component (A) to decompose it. This decomposed product dissipates at the time of heating after exposure. As a result, there exists a difference in refractive index between exposed and unexposed portions.
>
> At the time of heating, the residual components (A) and (D) which did not react with an acid or base react with each other to stabilize the formed refractive index pattern.
>
> The solvent used to prepare a solution containing the refractive index changing composition used in the present invention uniformly dissolves the above components (A), (B), (C), (D) and other optionally added additives and does not react with these components.

Earlier, in the Nishimura text, the components of the radiation sensitive RI changing compound (solution A of the waveguide formation text above) were described as follows (column 3, lines 5-10): A: decomposable compound; B: nondecomposable compound having a RI lower than decomposable compound C: radiation sensitive decomposer; and D: Stabilizer. Applicant submits that the "decomposition" of Nishimura (which results from the acid or base formed by component C acting on component A) does not result in an index contrast region which is situated between the core and cladding regions and that no such region is described in Nishimura. Furthermore, these regions cannot be formed in the embodiment of Nishimura because there is no diffusion and subsequent polymerization of monomers to form them. Nishimura simply decomposes and volatilizes the components in his system.

Thus the "volatilizing" and the "index contrast region" recitations of claims 1 and 16 are not disclosed by Nishimura.

Claim 1 additionally includes the recitation of "wherein the polymerizable composite comprises a polymer binder and sufficient quantities of an uncured monomer to diffuse into the exposed area of the layer and form the index contrast region." Applicant can find no disclosure of this recitation in Nishimura.

Claim 16 additionally includes the recitation of: one portion of the unexposed area comprising the

core region and another portion of the unexposed area comprising a diffusion source region. Applicants can find no reference to a diffusion source region in Nishimura. These are described in Applicant's specification with respect to at least FIGs. 14-19, for example.

Accordingly, Applicant respectfully submits that claim 1, and claims 2-8, 10-11, and 13 15 which depend therefrom, claim 16, and claims 17-32 which depend therefrom define allowable subject matter over Nishimura.

In summary, Applicant respectfully requests that a timely Notice of Allowance be issued in this case. Should the Examiner believe that anything further is needed to place the application in better condition for allowance, the Examiner is requested to contact Applicant's undersigned representative at the telephone number below.

Respectfully submitted,

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